

AMENDMENTS TO THE CLAIMS

This listing of claims replaces all prior versions, and listings, of claims in the application:

1 1. (Previously Presented) A method of forming a microcrystalline thin film, comprising:
2 supplying, during a first process, SiH₄ and H₂ to a chamber in which a substrate is
3 located;
4 supplying, during a second process, H₂ but not SiH₄ to the chamber;
5 depositing a portion of the microcrystalline thin film during the second process; and
6 performing the first process and second process a plurality of times to form the
7 microcrystalline thin film having a target film thickness on the substrate.

1 2. (Cancelled)

1 3. (Previously Presented) The method of claim 1, wherein performing the first process and
2 second process a plurality of times is performed without removing the substrate from the
3 chamber.

1 4. (Original) The method of claim 3, further comprising applying an electric field in the
2 chamber to break down the SiH₄ to SiH₂.

1 5. (Previously Presented) The method of claim 4, wherein supplying the H₂ comprises
2 supplying the H₂ at a generally constant rate.

1 6. (Original) The method of claim 4, further comprising depositing the SiH₂ to a surface of
2 the substrate during the second process.

1 7. (Previously Presented) The method of claim 1, further comprising:
2 converting SiH₄ to SiH₂; and
3 depositing SiH₂ on the substrate during the second process.

1 8. (Previously Presented) The method of claim 7, wherein depositing SiH₂ on the substrate
2 during the second process without supplying SiH₄ reduces formation of a polymer due to SiH₂
3 molecules encountering each other prior to depositing of SiH₂ on the substrate.

1 9. (Cancelled)

1 10. (Currently Amended) The method of claim [[9]] 28, wherein bonding of SiH₂ is
2 suppressed in the source depositing process.

1 11. (Cancelled)

1 12. (Currently Amended) The method of claim [[11]] 28, wherein H₂ is supplied at a
2 constant flow rate throughout said source supplying process and said source depositing process.

1 13. (Currently Amended) The method of claim [[11]] 28, wherein a flow rate ratio, r, of SiH₄
2 and H₂ satisfies $r \geq - (7/12)xP + 72.5$, where P is an electric field intensity density irradiated on
3 SiH₄ and H₂.

1 14. (Currently Amended) The method of claim [[9]] 28, wherein performing said source
2 supplying process comprises performing the source supplying process for 2 seconds or less, and
3 performing said source depositing process comprises performing said source depositing process
4 for longer than said source supplying process.

1 15.-16. (Cancelled)

1 17. (Currently Amended) A method of manufacturing a thin film transistor comprising:
2 forming a gate electrode on the substrate;
3 forming an insulation layer film on said substrate and said gate electrode,
4 forming at least a portion of a channel layer film on said insulation layer by using the
5 microcrystalline thin film forming method of claim [[9]] 28; and
6 forming a source/drain electrode on said channel layer.

1 18. (Previously Presented) The method of manufacturing a thin film transistor of claim 17,
2 wherein forming the channel layer film comprises forming the microcrystalline thin film up to 1
3 nm away into the channel layer film from the interface with said insulation layer.

1 19.-25. (Cancelled)

1 26. (Previously Presented) The method of claim 1, wherein supplying SiH₄ and H₂ during
2 the first process comprises supplying SiH₄ at a first rate and H₂ at a second rate, the first rate and
3 second rate defining a flow rate ratio that prevents a thin film formed on the substrate from
4 becoming amorphous.

1 27. (Previously Presented) The method of claim 26, further comprising applying an electric
2 field during the first process, the electric field set at an intensity that in combination with the
3 flow rate ratio prevents a thin film formed on the substrate from becoming amorphous.

1 28. (Currently Amended) The method of claim 9, further comprising A method of forming a
2 microcrystalline thin film by activating SiH₄, and forming a film having a microcrystalline
3 structure on a film forming target object, wherein activating SiH₄ comprises applying an electric
4 field to break down SiH₄ to SiH₂, the method further comprising:
5 performing a source supplying process in which SiH₄ is supplied,
6 performing a source depositing process in which the supply of SiH₄ is stopped and SiH₂
7 is deposited on the film forming target object to form the microcrystalline structure, and
8 supplying H₂ during the source supplying process and during the source depositing
9 process, SiH₄ and H₂ being supplied at flow rates during the source supplying process to prevent
10 a film formed on the film forming target object from becoming amorphous.

1 29. (Currently Amended) A method of forming a microcrystalline thin film, comprising:
2 supplying, during a source supplying process, SiH₄ and H₂ to a chamber in which a
3 substrate is located, wherein formation of a layer of an amorphous film is prevented during the
4 source supplying process; and
5 depositing the microcrystalline thin film on the substrate, wherein prior to depositing the
6 microcrystalline thin film, the supplying of SiH₄ to the chamber is stopped.

1 30. (Currently Amended) The method of claim 29, further comprising:
2 applying an electric field in the chamber during the source supplying process to break
3 down SiH₄ to SiH₂ molecules,
4 wherein depositing the microcrystalline thin film is performed during a source depositing
5 process, and wherein forms a majority of the SiH₂ molecules is adsorbed on the substrate during
6 the source depositing process to deposit the microcrystalline thin film on the substrate.

1 31. (Currently Amended) ~~The method of claim 29~~ A method of forming a microcrystalline
2 thin film, comprising:
3 supplying SiH₄ and H₂ to a chamber in which a substrate is located; and
4 depositing the microcrystalline thin film on the substrate, wherein prior to depositing the
5 microcrystalline thin film, the supplying of SiH₄ to the chamber is stopped,
6 wherein supplying SiH₄ and H₂ during the first process comprises supplying SiH₄ at a
7 first rate and H₂ at a second rate, the first rate and second rate defining a flow rate ratio that
8 prevents a thin film formed on the substrate from becoming amorphous.